

HPV

Higher prevalence of human papillomavirus infection in migrant women from Latin America in Spain

C González, M Ortiz, J Canals, L Muñoz, I Jarrín, M G de la Hera, A García-Saiz, J del Amo

Sex Transm Infect 2006;**82**:260–262. doi: 10.1136/sti.2005.016774

Objectives: To estimate prevalence and determinants of high risk (HR) human papillomavirus (HPV) by country of origin in women attending a family planning centre (FPC) in Alicante, Spain.

Methods: Cross sectional study of all women attending a FPC from May 2003 to January 2004. An ad hoc questionnaire was designed and data were collected prospectively. HR HPV infection was determined through the Digene HPV test, Hybrid Capture II, and positive samples for PCR were directly sequenced. Data were analysed through multiple logistic regression.

Results: HR HPV prevalence in 1011 women was 10% (95% CI: 8.2 to 12). Compared to Spaniards (prevalence 8.2%) HR HPV prevalence in Colombians was 27.5% (OR: 4.24 95% CI: 2.03 to 8.86), 23.1% in Ecuadorians (OR: 3.35 95% CI: 1.30 to 8.63), and 22.73% in women from other Latin American countries (OR: 3.29 95% CI: 1.17 to 9.19). Women with more than three lifetime sexual partners had an increased risk of HR HPV infection (OR 3.21 95% CI: 2.02 to 5.10). The higher risk of HR HPV infection was maintained in Latin American women in multivariate analyses that adjusted for age, number of lifetime sexual partners, and reason for consultation. The commonest HPV types in women with normal cervical smears were HPV-18 (20%), HPV-16 (14%) and HPV-33 (11%).

Conclusions: Prevalence of HR HPV is more than three times higher in Latin Americans than in Spaniards. Latin American women's HPV prevalence resembles more that of their countries of origin. It is essential that health service providers identify these women as a priority group in current cervical screening programmes

in the prevalence and risk factors for high risk HPV infection in women attending a family planning centre in Alicante, Spain.

SUBJECTS AND METHODS

This was a cross sectional study of women attending a family planning centre (FPC) from May 2003 to January 2004. FPC are open and free of charge to all women irrespective of legal status; none of the women invited to participate in this study refused. A structured questionnaire designed ad hoc was administered by a trained investigator to all participants. Data were collected prospectively. High risk HPV (HR HPV) infection was determined through the Digene HPV Test, Hybrid Capture II (HC-II) which identified types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, and 68. In all HC-II positive samples, HPV typing was performed by polymerase chain reaction (PCR) and direct sequencing. DNA was recovered from a 150 µl aliquot of the frozen, stored, alkali denatured specimen and was amplified in suitable samples. MY09/MY11 general consensus primers were used to amplify a 450 pb fragment of HPV L1 gene. Positive samples were sequenced using the Big Dye Terminator Cycle Sequencing Kit with inner PCR primers. HPV type assignation was done by phylogenetic analysis using programs contained in the Phylip 3.5 package.

Demographic and clinical differences were compared using χ^2 tests. Multiple logistic regression was used to study the relations between HR HPV infection and explanatory variables looking for confounding and interaction. Analyses were conducted in Stata 8 (Texas Corporation, USA).

RESULTS

In all, 1011 women were studied; 841 (83.2%), were Spanish and 12.2% originated from Latin America (table 1). Median age was similar between Spaniards and Latin Americans. Smoking was commoner among Spanish women than Latin Americans (63% v 40%). A higher proportion (60%) of Spanish women came to the clinic for follow ups while most Latin Americans (75%) came for their first visit. Spanish women reported a lower number of sexual partners than Latin Americans. Forty three per cent of the Spanish women had been tested for HIV test compared to 55% of Latin Americans.

Global HR HPV prevalence using HC-II was 10% (95% CI: 8.2% to 12%). HR HPV prevalence was higher in Latin American women, women whose first sexual intercourse was before age 17, women with more than three life time sexual partners, those who came for their first clinic visit and women having had an HIV test (table 1). The higher risk of HR HPV infection was maintained in Latin American women in multivariate analyses that adjusted for age, lifetime sexual

There is substantial intercountry variation in human papillomavirus (HPV) prevalence in women from the general population.^{1–6} Much of this variation may be attributable to different sampling strategies and diagnostic techniques but, even among population based studies, HPV prevalence is higher in women from Latin America^{1 5} and sub-Saharan Africa⁴ and lower in Asia² and Europe.³ In Spain, one of the countries with the lowest cervical cancer rates worldwide,⁷ the only study that has estimated HPV prevalence in women from general population reported a 3% age adjusted prevalence.³ Rates are, as expected, higher in commercial sex workers (CSWs), including migrant CSWs.^{8 9}

Over the past decade a large number of migrants have arrived in Spain; 40% come from Latin America and 50% are women.¹⁰ Prevalence of HPV in Latin American women is higher than in Spaniards^{1 3 5} but no data are available on prevalence and determinants of HPV infection in these women with an a priori higher risk of cervical cancer in our setting. This study estimates differences by country of origin

Abbreviations: CSWs, commercial sex workers; FPC, family planning centre; HPV, human papillomavirus; HR, high risk; PCR, polymerase chain reaction

Table 1 HPV prevalence, univariate, and multivariate analyses of HPV infection by sociodemographic and clinical characteristics

	No (%) 1011	HPV prevalence	OR univariate (CI 95%)	OR multivariate (CI 95%)
Country of origin				
Spain	841 (83.2)	8.2%	1	1.00
Colombia	40 (4)	27.5%	4.24 (2.03 to 8.86)	2.84 (1.30 to 6.22)
Ecuador	26 (2.6)	23.08%	3.35 (1.30 to 8.63)	3.73 (1.37 to 10.17)
Other Latin American countries	22 (2.2)	22.73%	3.29 (1.17 to 9.19)	2.63 (0.90 to 7.69)
Argentina	34 (3.4)	20.59%	2.90 (1.21 to 6.90)	2.05 (0.82 to 5.12)
European countries	32 (3.2)	9.38%	1.15 (0.34 to 3.89)	0.86 (0.24 to 2.98)
Africa/Asia	16 (1.6)	6.25%	0.74 (0.09 to 5.73)	0.59 (0.07 to 4.82)
Age				
<24 years	242 (24)	10.33%	1	1
25–29 years	178 (17.7)	12.36%	1.22 (0.66 to 2.25)	1.07 (0.56 to 2.04)
30–34 years	193 (19.2)	8.29%	0.78 (0.40 to 1.51)	0.64 (0.32 to 1.28)
35–41 years	225 (22.4)	12.44%	1.23 (0.69 to 2.18)	1.21 (0.65 to 2.24)
>42 years	169 (16.8)	6.51%	0.60 (0.28 to 1.26)	0.70 (0.32 to 1.54)
Age at first sexual intercourse				
<17 years	409 (40.5)	13.17%	1	
≥17 years	600 (59.3)	7.99%	0.57 (0.37 to 0.86)	
No of lifetime sexual partners				
<3	659 (65.3)	6.07%	1	1
3–5	244 (24)	17.21%	3.21 (2.02 to 5.10)	3.14 (1.95 to 5.08)
>6	107 (10.6)	18.7%	3.55 (1.98 to 6.36)	3.37 (1.82 to 6.26)
Reason for consultation				
First visit	435 (43.4)	13.79%	1	1
Follow up	555 (55.3)	7.03%	0.47 (0.31 to 0.72)	0.63 (0.39 to 1.01)
Not known	13 (1.3)	23%	1.04 (0.30 to 3.64)	1.37 (0.36 to 5.07)
HIV test done				
No	534 (52.8)	8.05%	1	
Yes	453 (44.8)	13.02%	1.7 (1.12 to 2.58)	
Educational level				
No education	62 (6.1)	4.84%	1	
Primary education	344 (34)	10.17%	2.22 (0.66 to 7.48)	
Secondary education	384 (38)	10.42%	2.28 (0.68 to 7.63)	
University studies	220 (21.8)	11.06%	2.44 (0.70 to 8.43)	
Not known	1 (0.1)	8.33%	1.78 (0.17 to 18.80)	
Marital status				
Single	370 (36.6)	11.62%	1	
Married/lives with partner	565 (55.9)	8.31%	0.7 (0.44 to 1.06)	
Widow/divorced/separated	76 (7.5)	15.78%	1.42 (0.71 to 2.85)	

partners, and reason for consultation (table 1). No interactions were detected between HR HPV prevalence and country of origin and other variables.

Of 1011 women, 96% had a cervical smear done, of which 761 (78%) yielded valid results. Among 703 women with normal cervical smears, 55 were positive with HC-II, of which 35 were typed. The commonest HPV types were HPV-18 (20%), HPV-16 (14%), and HPV-33 (11%)—HPV-16 (17%), HPV-18 (17%), HPV-51 (13%), and HPV-31 (13%) in 24 samples typed from Spaniards and HPV-18 (27%), HPV-66 (27%), HPV-16 (9%), HPV-58 (9%), HPV-31 (9%), and HPV-33 (9%) in 11 samples typed from Latin Americans.

DISCUSSION

HR HPV prevalence in Spanish women was 8% while in Latin Americans ranged from 21% in Argentinians to 27% in Colombians. Women from other countries had HR HPV prevalences similar to Spaniards. The prevalence found in our study is higher than the 3% age adjusted prevalence found in Barcelona, probably because of the higher proportion of sexually active women and higher prevalence of cytological abnormalities in FPCs attenders but also, because of the higher proportion of Latin American women in our study.⁴

Latin American women seem to retain the high HR HPV prevalence from in their countries of origin after migrating to other countries. In our study, differences by country of origin were maintained even after adjusting for age, clinic attendance, and indicators of sexual behaviour. Unfortunately, length of stay in the country was not collected in our study

but 25% had had a second visit indicating that they had been, at least, a year in the country. Given that median duration of HR HPV infection is approximately 12 months,¹¹ it is likely that some of these HR HPV infections are taking place in Spain; further follow up of these women will allow us to measure incidence of infection. Colombian men have been reported to have a fivefold increase in HR HPV prevalence than Spanish men,¹² but no data were collected on the characteristics of these women's sexual partners.

HPV-18, HPV-16, and HPV-33 were the commonest types among women with normal smears. There was a suggestion of a different distribution of HPV types by geographical area but data are only based on 35 samples. Sanjosé *et al* found that commonest types in women from the general population were HPV-16, HPV-51, and HPV-68 based on only 29 samples.³ Larger studies are needed.

In summary, one in every 10 women attending a FPC in Alicante, Spain, is infected by HR HPV. This risk is three times higher in migrant women from Latin America. It is essential that health service providers identify these women as a priority group in current cervical screening programmes.

CONTRIBUTORS

JdA, JC, AG, MO, and MGdlH initiated this project; CG and JC were responsible for data collection and data entry; MO, AG, LM were responsible for laboratory work; CG and IJ were responsible for statistical analyses; CG and JdA wrote the first draft of the paper; all authors were involved in the study design and commented on interim drafts and all authors have reviewed the final manuscript.

Authors' affiliations

C González, I Jarrín, M G de la Hera, J del Amo, Department of Public Health and History of Science, Miguel Hernández University, Alicante, Spain

M Ortiz, I Muñoz, A García-Saiz, National Centre of Microbiology, Instituto de Salud Carlos III, Madrid, Spain

J Canals, Family Planning Centre No II, Alicante, Spain

This study was supported by funds provided by Generalitat Valenciana, Conselleria de Sanidad, DOGV, and was also supported by the Spanish Medical Research Fund (FIS), through grant C03/09 for RCEP and Programa intramural promoción investigación biomedical ISCIII MPI 1117/03).

Correspondence to: Julia del Amo, Departamento de Salud Pública, Universidad Miguel Hernández, Campus de San Juan, Crtra, Alicante-Valencia Km 87, 03550 San Juan, Alicante, Spain; jamo@umh.es

Accepted for publication 12 September 2005

REFERENCES

- 1 **Molano M**, Posso H, Weiderpass E, et al. HPV Study Group HPV Study. Prevalence and determinants of HPV infection among Colombian women with normal cytology. *Br J Cancer* 2002;**87**:324–33.
- 2 **Pham TH**, Nguyen TH, Herrero R. Human papillomavirus infection among women in South and North Vietnam, et al. *Int J Cancer* 2003;**104**:213–20.
- 3 **de Sanjose S**, Almirall R, Lloveras B, et al. Cervical human papillomavirus infection in the female population in Barcelona, Spain. *Sex Transm Dis* 2003;**30**:788–93.
- 4 **Thomas JO**, Herrero R, Omigbodun AA, et al. Prevalence of papillomavirus infection in women in Ibadan, Nigeria: a population-based study. *Br J Cancer* 2004;**90**:638–45.
- 5 **Ferreccio C**, Prado RB, Luzoro AV, et al. Population-based prevalence and age distribution of human papillomavirus among women in Santiago, Chile. *Cancer Epidemiol Biomarkers Prev* 2004;**13**:2271–6.
- 6 **Tarkowski TA**, Koumans EH, Sawyer M, et al. Epidemiology of human papillomavirus infection and abnormal cytologic test results in an urban adolescent population. *J Infect Dis* 2004;**189**:46–50.
- 7 Globocan 2002. Cancer incidence, mortality and prevalence worldwide. Accessed August 2004. Available at www.dep.iarc.fr/dataava/infodata.htm.
- 8 **Touze A**, de Sanjose S, Coursaget P, et al. Prevalence of anti-human papillomavirus type 16, 18, 31, and 58 virus-like particles in women in the general population and in prostitutes. *J Clin Microbiol* 2001;**39**:4344–8.
- 9 **Del Amo J**, Gonzalez C, Losana J, et al. Influence of age and geographical origin in the prevalence of high risk human papillomavirus in migrant female sex workers in Spain. *Sex Transm Infect* 2005;**81**:79–84.
- 10 Extranjeros residentes legalmente en España 2003. Accessed on the August 2004. Available at www.ine.es/.
- 11 **Munoz N**, Mendez F, Posso H, et al. Incidence, duration, and determinants of cervical human papillomavirus infection in a cohort of Colombian women with normal cytological results. *J Infect Dis* 2004;**190**:2077–87.
- 12 **Castellsagué X**, Ghaffari A, Daniel RW, et al. Prevalence of penile human papillomavirus DNA in husband of women with and without cervical neoplasia: a study in Spain and Colombia. *J Infect Dis* 1997;**176**:353–61.